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Petition
make
Special
3/5/02
J. Brown

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

MUSSELWHITE ET AL.

Serial No.: 09/524,117

Filed: March 13, 2000

WELL COMPLETION CONVERTIBLE FLOAT
SHOE/COLLAR
For: ~~MULTI-PURPOSE FLOAT~~
~~EQUIPMENT AND METHOD~~

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Attorney Docket: Davis Lynch 014

Examiner: Zakiya N. Walker

Art Unit: 3672

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PETITION TO MAKE SPECIAL UNDER 37 C.F.R. § 1.102 (d)

Assistant Commissioner of Patents
Box Non-Fee Amendment
Washington, D.C. 20231

Sir:

Applicants respectfully submit herewith a Petition to Make Special for grounds of actual infringement of a product actually on the market in accord with 37 C.F.R. § 1.102 (d) and M.P.E.P. §708.02, section II, entitled Infringement. The appropriate fee under 37 C.F.R. 1.17 (h) is included herewith.

As required by M.P.E.P. § 708.02 (VIII)(B), Applicants hereby present claim 14 from an Amendment to the present application transmitted on November 2, 2001. As a convenience, a copy of that Amendment is included in the appendix (under tab 3). If the Office determines that

other claims presently at issue in this application are not obviously all directed to a single

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other claims presently at issue in this application are not obviously all directed to a single invention, then Applicants elect claim 14 and any other claims to the same invention as determined by the Office, without traverse, in accord with the requirements of this section.

In accord with the specific requirements of M.P.E.P. § 708.02, section II, a showing of evidence related to the requirements listed therein is provided now. Although no other fees are believed due, authorization is also hereby provided to charge any other fees due to Deposit Account No. 13-1266.

(I) **INFRINGING DEVICE IS PRESENTLY FOR SALE IN THE MARKET**

Copies of several pages in color of an advertisement for the infringing are attached to this petition (in the appendix under tab 1). A copyright notice and date on the attached advertisement of February 28, 2001 show that the product is presently being offered for sale. Since this product competes directly with Applicant's product, Applicants are being injured in the marketplace by the infringement.

(II) **RIGID COMPARISON OF ALLEGED INFRINGING DEVICE WITH CLAIMS**

For the convenience of the Examiner, FIG. 1 and FIG. 4 of Applicant's application are attached herewith (in the appendix under tab 2).

Claim 14 that is listed below, which is unquestionably infringed, is included in an Amendment, filed November 2, 2001, responsive to the Office Action dated July 19, 2001 for above identified application.

For convenience of the Examiner, comments and capital letters in brackets are used to mark the claim elements to thereby permit easy comparison of the claim elements with the same elements disclosed in the advertisement. Corresponding letters are also marked on Applicants' drawings to show support in the specification.

14. [See discussion under Project Description on first page of the advertisement in Appendix 1 which states general background of accused device is float equipment]

Float collar/shoe equipment for use in lowering a tubular string into a wellbore and cementing the tubular string in position, comprising:

[A] an outer tubular member affixed to said tubular string;

[F - first and second pages of the advertisement which show an inner tubular that is moveable from a first position to a second position] an inner tubular member moveable between a first position and a second position with respect to said outer tubular member;

[Flapper C and valve body B along with Flapper E and valve body E are shown in the first page of the advertisement to be positioned between inner tubular F and outer tubular A to hold the

flappers open, the last figure on the second page of the advertisement shows inner tubular F removed to permit the valves to function as one-way valves] a plurality of one-way valves positioned between said inner tubular member and said outer tubular member, said plurality of one-way valves having a plurality of closure elements and a plurality of valve seats, said inner tubular member being positioned in said first position such that said inner tubular member extends through said plurality of one-way valves and covers said plurality of valve seats and maintains said plurality of closure elements in an open position such that fluid may flow through said plurality of one-way valves in two directions, said inner tubular member being moveable to thereby uncover said plurality of valve seats and permit said closure elements to close such that said plurality of one-way valves then permit fluid flow in one direction.

Applicants submit that it will be readily appreciated by the Examiner that the wording of each element of the claims is unquestionably infringed by the device shown in the attached advertisements.

(III) THOROUGH SEARCH OF PRIOR ART

A search for the parent application had already been made by the Examiner of the parent application. The results of that search were filed in an information disclosure statement Form 1449 at the time of filing of the present application. To comply completely with M.P.E.P.

§708.02(H)(C), Applicants have also made a subsequent search of the prior art. Applicants' search was directed mainly toward class/subclass 166/317 but also to a review of class/subclass 166/318.

The whole of class 166 with all subclasses was searched utilizing keywords in the specification such as "flapper." All classes of word searchable patents in the U.S.P.T.O. database were searched with terms such as "dual flapper" and "double flapper." As well, all patents were searched by combinations of terms such as [wellbore, cement, flapper] and the like.

All four inventors' names were searched. While the inventors had previous patents relating to cementing, casing, surge pressure reduction, the only patent that appears to be relevant to the claimed structures is U.S. Patent No. 6,311,775 B1, which issued November 6, 2001 with a filing date of April 3, 2000. The '775 includes two of the present inventors. '775 actually relates to a plurality of valves within a pump down plug rather so as to be inherently of smaller bore diameter than a plurality of valves originally mounted directly in the float equipment. However, the structures of claim 14 are clearly supported by the specification filed March 13, 2000 as shown by use of the same letters on FIG. 1 and FIG. 4 of the application shown in Appendix 2. Therefore, '775 is predated by the priority date and is not a reference and is not listed for this reason and/or may also be removed as a reference by other procedures or for other reasons.

The remaining resulting patents provided on the attached Form 1449 show what is deemed to be the most closely related art. For convenience of the Examiner, copies of the prior art are

included in the appendix under tab 4.

Surge flow is often mixed with cuttings and debris, and may often result in high fluid flow and erosion, as discussed somewhat in patents such as the '775, Col. 4, lines 2-7. The surge flow in a properly designed tool can be quite high and may be mixed with large amounts of cuttings and debris that can erode, cut, or inhibit operation of valves in the flow path. Due to the close tolerances that occur in wells where surge pressure becomes a problem, cementing baskets and/or other components external to the float shoe, such as the cementing basket as shown in U.S. Patent No. 4,469,174 are completely unsuitable. In fact, utilizing a cementing basket would greatly exacerbate or increase the surge pressures that are created. Moreover, in close tolerance wellbores, a cementing basket as shown in '174 is likely to jam and cause the entire casing string to get stuck. In a worst case, this may cause loss of the well just before bringing the well into production resulting in significant monetary losses.

It will be seen that there are many examples of flapper valves used in float equipment. The prior art shows several types of devices, including float equipment, that use more than one flapper valve. However, there is no prior art that shows two simultaneously operable flapper valves that may be simultaneously converted from the fill mode to the back pressure mode.

To avoid the significant surge flow problems such as debris and erosion, Applicants also completely seal off both flapper valves as shown in FIG. 1-4 from any contamination/erosion and provide the capability to convert both flapper valves simultaneously prior to cementing. Applicants' dual flapper valve assembly is therefore highly suitable for surge reduction and provides both high fluid flow and high reliability while avoiding damage to the valves.

The advertisement of the infringing device does not actually show for sure how or even whether the flapper valves are completely protected from the debris and erosion as taught by

Applicants. But clearly even the assembly configured as shown in the advertisement will be more useful and reliable for avoiding damage to the plurality of flapper valves from the surge flow erosion and debris than the prior art devices. Apparently, for that reason, the infringer has intentionally copied Applicants' design and presently benefits greatly therefrom.

In more detail, the cited prior art is as follows:

U.S. Patent No. 4,474,241, issued October 2, 1984, to T.A. Freeman, discloses a differential fill valve assembly for application in float collars or shoes in well casing. The valve assembly comprises a back pressure flapper valve disposed within a substantially tubular upper housing, and a lower housing containing an activating sleeve slidably disposed therein above a double flapper valve assembly. The activating sleeve initially extends into the upper housing to a sufficient extent to maintain the flapper valve in an open position; the activating sleeve is maintained in this position through use of shear pins, by which it is secured to the lower housing. The double flapper valve comprises a first flapper responsive to pressure below the valve assembly, and a second flapper responsive to force applied from above. A tripping ball is dropped to seat in the activating sleeve when it is desired to release the back pressure flapper valve; pressure applied on the ball moves the activating sleeve downward, releasing the back pressure flapper valve and swinging the double flapper valve assembly out of the flow path through the differential fill assembly, after which the tripping ball exits the bottom of the assembly. A lock ring maintains the activating sleeve in its lower position, while a shear screw riding in a longitudinal channel in the lower housing prevents rotation of the activating sleeve during its longitudinal movement prior to its contacting the double flapper valve assembly.

U.S. Patent No. 4,469,174, issued September 4, 1984, to T. A. Freeman, discloses a combination cementing shoe and basket, comprising a substantially tubular mandrel having a

cement basket disposed thereabout, the cement basket being maintained in a collapsed mode by an annular overshot at the bottom of a coupling at the top of the mandrel. A flapper valve assembly is located within the mandrel, being maintained in an open mode by the presence of a fillup tube disposed in the valve orifice. The bottom of the fillup tube is secured to a slidable ball seat located below the flapper valve assembly. The ball seat is initially secured in place by attachment through a plurality of shear rods to a tubular activating sleeve disposed around the mandrel and under the cement basket, the activating sleeve being maintained in its initial position by contact with the bottom of the cement basket, which is fixed to the mandrel by a shear screw. To operate the apparatus, a tripping ball is pumped down the casing to the ball seat, whereupon the casing pressure would cause the basket shear rods, acted upon by the activating sleeve, to shear, the basket moving downward and out from under the coupling overshot. Continued application of pressure causes the activating sleeve screw to shear, allowing the ball seat to move to the bottom of the mandrel, and removing the fillup tube from the flapper valve orifice, permitting the flapper to close.

U.S. Patent No. 4,846,281, issued July 11, 1989, to Clary et al., discloses a dual flapper valve assembly that permits a well logging operation to be carried out after a gravel pack has been deposited without losing a large amount of completion fluid into the formation. The dual flapper valves can be closed and fractured independently of each other and selectively to accommodate a gravel pack operation, a well logging operation and a completion fluid recovery operation. The closure plate of the lower flapper valve is propped open by the wash pipe during the gravel pack operation. The lower closure plate is fractured to accommodate a well logging operation, while the closure plate of the upper flapper valve is held open by a prop sleeve. Upon completion of the well logging operation, the prop sleeve is retracted out of engagement with the closure plate of the upper flapper valve, thereby permitting the upper flapper valve to close. The heavy completion fluid

remaining in the casing annulus is thereby conserved and can be recovered to the surface, while the gravel pack and the formation are protected from the pressure of the heavy completion fluid. After recovery of the completion fluid, the closure plate of the upper flapper valve is fractured to accommodate production operations.

U.S. Patent No. 4,729,432, issued March 8, 1988, to L. C. Helms, discloses a differential fill valve assembly for application in float collars or shoes in well casing. The valve assembly comprises a back pressure flapper valve disposed within a substantially tubular upper housing, and a lower housing containing an activating sleeve slidably disposed therein above a double flapper valve assembly. The activating sleeve initially extends into the upper housing to a sufficient extent to maintain the flapper valve in an open position and comprises a lower tubular sleeve surmounted by a circumferential ring of longitudinally upwardly extending collet fingers having radially inwardly extending shoulders thereon, said fingers and shoulders having elastomeric inserts extending therebetween; the activating sleeve is maintained in this position through use of shear pins, by which it is secured to a support ring associated with the lower housing. The double flapper valve comprises a first flapper responsive to pressure below the valve assembly, and a second flapper responsive to force applied from above. A tripping ball is dropped to seat on the shoulders in the activating sleeve when it is desired to release the back pressure flapper valve; pressure applied on the ball moves the activating sleeve downward, releasing the back pressure flapper valve and swinging the double flapper valve assembly out of the flow path through the differential fill assembly, after which the tripping ball exits the bottom of the assembly. Outward deformation of the collet ring maintains the activating sleeve in its lower position.

U.S. Patent No. 2,751,021, issued June 19, 1956, to J. F. Muse, discloses an apparatus for controllably filling a conduit string, such as a string of casing or drill pipe, with the fluid in the well

bore as it is lowered therewithin comprising a tubular member having means thereon for securing the member in the conduit string to be lowered. A valve seat is provided in the tubular member whereby the valve member is pivotally mounted in the tubular member and moveable upwardly into engagement with the seat. A valve device allows upward flow of fluid in the tubular member. The device engages the valve member to prevent engagement with the seat. Releaseable means engageable with the valve device and connected to the tubular member hold the device in engagement with the valve member. The means is releasable to allow the valve device to be shifted downwardly in the tubular member out of engagement with the valve member to allow the valve member to engage the seat.

U.S. Patent No. 2,735, 498, issued February 21, 1956, to J. F. Muse, discloses an apparatus adapted to form part of a conduit string, such as casing, liner, or drill pipe, as it is lowered into the well bore. Flow control means provide a restricted passage in the tubular member through which fluid can flow upwardly and bypass a valve member when the valve member engages a seat. A valve means is moveable to a position across the restricted passageway to close the restricted passageway.

U.S. Patent No. 3,148,731, issued September 15, 1964, to J. C. Holden, discloses a cementing tool comprising a mandrel having radial ports, means for attaching the mandrel to a casing string, a valve body mounted with the mandrel wherein the valve has a chamber formed in the lower portion thereof and a deformable orifice thereabove. The valve body further has radial ports communicating with the chamber. Mandrel ports are provided in the same radial plane as the radial ports. A frangible holding means prevents relative movement between the valve body and the mandrel until a first predetermined fluid pressure is applied to the valve body.

U.S. Patent No. 3,995,692, issued December 7, 1976, to P. W. Seitz, discloses a down-

hole apparatus for use especially in casing cementing operations wherein a so-called string of casing is lowered into a well bore and cemented in place. The apparatus comprises an insert, disposed across the interior of the casing, containing a spring loaded flapper valve assembly which is held open by a movable valve seating member until a ball is seated in the seating member and pressure applied through the casing to the sealed valve seating member forces the seating member downward, releasing the flapper valve, and expands the lower end of the seating member as the ball is forced through it. On release of the casing pressure from above, the flapper valve closes. A plurality of the inventive devices may be placed along the casing, the ball valve sealing each, in turn, from top to bottom.

U.S. Patent No. 4,664,192, issued May 12, 1987, to P. J. M. Hogarth, discloses that in conjunction with drilling a well, when sections of casing are run down a borehole, a float shoe at the lower end which is equipped with a double valve enabling the casing to fill with drilling mud both while the casing is moving down and also while it is stationary. Within the casing is a baffle collar which defines a socket for a latching dart carried by a plug. The plug and dart are driven down to the collar, when the pumping of cement into the casing has been completed, by a launching dart which also closes the passageway through the plug.

U. S. Patent No. 4,688,593, issued August 25, 1987, to Pringle et al., discloses a reverse flow check valve for use in a pumping well to prevent backflow when the pump is shut down in which the valve has pump through capabilities for killing the well. The valve includes a housing having a bore with a valve closure element in the bore. A flow tube telescopically moves in the housing upwardly for opening and downwardly for actuating the closing of the member. The flow tube is biased downwardly, preferably by weight, for closing the valve and is responsive to a pressure drop for holding the valve element open. The housing has a port initially closed, but may be opened for pumping through the valve.

U.S. Patent No. 3,032,050, issued May 1, 1962, to E. H. Clark, Jr., discloses an apparatus for automatically filling a conduit string, such as well casing, as it is being lowered through fluid in a well bore. A tubular member is adapted to be secured to a conduit section to be disposed in the well bore. A valve housing is secured in the tubular member. A valve seat is in the housing. A lower stationary guide member is secured to the housing against movement in both longitudinal directions. A valve member telescopes over the lower guide member in leakproof relation with respect thereto to provide a confined space closed by the valve member and the lower guide member into which well bore fluid cannot enter. The valve member has a portion slidable along the upper guide member. The valve member is slidable downwardly along the guide members into engagement with the seat. A shear ring engaging the valve seat and housing releasably secures the valve seat to the housing against downward movement.

U.S. Patent No. 6,244,342, issued June 12, 2001, to Sullaway et al., discloses an invention that relates to a reverse-cementing apparatus. The reverse-cementing apparatus is a float apparatus connected in a pipe string to be cemented into a wellbore. The float apparatus includes an outer housing connected to the casing string. A check valve for preventing flow from the wellbore into the pipe string is disposed in the housing. The check valve is releasably disposed in the housing so that it can be removed from the housing once the pipe string is in place. A flow path for fluid from the wellbore into the pipe string is therefore provided. Cement displaced into the annulus will cause fluid in the wellbore to enter the pipe string through the housing so that the pipe string can be cemented in place utilizing a reverse-cementing method.

U.S. Patent No. 5,474,130, issued December 12, 1995, to T. C. Davis, discloses a well casing cleaning tool that includes a tubular tool body that has a central axial passageway and upper and lower sets of jet ports through the tool body wall. The upper jet ports are angled upward and the lower jet ports are angled downward. The outside diameter of the cleaning tool is slightly smaller than the inside diameter of the well casing to be cleaned. When wash fluid is pumped through the

jet ports of the cleaning tool, an area of reduced pressure forms between the upper and lower sets of jet ports. This area of reduced pressure aids in the cleaning of the perforation zone of a well. Bypass passages from above the upper set of jet ports to below the lower set of jet ports prevent a pressure difference between the two sets of jet ports.

The above-discussed prior art clearly does not disclose the claimed invention. Therefore, to obtain an improved apparatus for reducing surge pressure, the infringer has intentionally copied Applicants' design and presently benefits greatly therefrom. Accordingly, Applicants respectfully request that the Petition to Make Special is granted so that Applicants may obtain speedy relief.

Respectfully submitted,



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